

duplicates the operation of the class driver, which, at system start-up, itself invokes the port driver to claim the storage devices (listed by the port driver as) coupled to the host.

Association of LUN ID with Physical Device Object Name

5

Further aspects of the invention provide an improved storage area network (SAN) of the type having a digital data processor, e.g., a host, in communication with one or more storage devices, e.g., a LUN and, further, of the type having a plug-and-play (PNP) manager that generates an event in response to a change in status of at least one of the storage devices.

10

The improvement is characterized, according to one aspect of the invention, by at least a selected process, that executes on the host (or other digital data processor), which references at least a selected one of the storage devices using a previously assigned logical identification, e.g., a LUN ID. The improvement is further characterized by the selected process responding to an event generated by the plug-and-play manager by querying for information the storage device (or an interface thereto) with respect to which the event was generated. From that information, the process generates a logical identification for the device.

15

In related aspects, the invention provides a SAN as described above in which the PNP manager generates, along with the event, a physical identification of the storage device with respect to which the event was generated. The improvement is characterized by the selected process referencing that physical identification in querying the storage device, or an interface thereto, for the aforementioned information. In a further related aspect of the invention, the PNP manager

20

executes at least in part in kernel mode, while the selected process executes in user mode. The selected process registers for, and is notified of, the event in user mode.

Further aspects of the invention provide a SAN as described above where the event signaled by the PNP signifies any of coupling or decoupling of a storage device to/from the host.

Yet still further aspects of the invention provide a SAN as described above in which the PNP manager generates, along with the event, a reference to a data structure containing data regarding the storage device with respect to which the event was generated. The improvement provides for parsing of that data by the selected process to determine an address of the storage device. That address can be used, for example, in querying the storage device or its interface (e.g., the port driver or adapter).

Fiber Channel Device Determination in Kernel Mode

The invention provides, in further aspects, an improved storage area network (SAN) of the type described above that has a host or other digital data processor whose ports are coupled to peripheral devices that include fiber channel or other SAN-class storage devices. Processes executing on the host (or other digital data processor) generate requests for access to those peripheral devices. The improvement is characterized by a persistent store that identifies ports coupled to SAN-class storage devices. This store can be loaded, for example, by a process that executes on the host in user mode. The improvement is further characterized by filter, such as

the aforementioned filter driver, that executes on the host in kernel mode to block access to selected ones of those SAN-class storage devices.

In related aspects, the invention provides a SAN as described above in which the store, which
5 can be retained as part of the host's Windows™ registry, identifies ports that are coupled to a specific class of SAN storage devices, notably, fiber channel storage devices. The filter, commensurately, blocks access to selected ones of the fiber channel devices. Further aspects of the invention provide a SAN as described above in which the filter does not block or, more simply, passes, requests for access to peripheral devices not identified as comprising SAN-class
10 storage devices.

Still further aspects of the invention provide a SAN as described above that includes an element, for example, the aforementioned SAN manager, that designates SAN-class storage devices as assigned (or unassigned) to the host. The filter, according to this aspect, passes requests for
15 access to peripheral devices that are identified as comprising SAN-class storage devices and that are designated as assigned to the host, while blocking access to those that are not assigned to the host.

Yet still further aspects of the invention provide a SAN as described above in which the host
20 executes a user mode process, e.g., as a final phase of host boot-up, which identifies ports coupled with SAN-class -- and, more specifically, fiber channel -- storage devices. The user mode process stores that information to the registry for use by a kernel mode processes running during earlier phases of a subsequent host boot-up.